-Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Inclined Planes

Theory: For an object sliding down an incline (ramp), it’s weight is broken down into two components: one perpendicular to the plane ( ) and one parallel to the plane ( ).

F = WsinΘ

F = W cosΘ

Example 1 A 5.0 kg mass sits on a frictionless plane at a 30° incline.

a) What is the weight of the object?

b) What is the weight’s component along the plane ( component)?

c) Is there any other force acting along the plane to counterbalance it?

d) How much of the weight pushes into the plane ( component)?

e) Is there any force balancing this in the perpendicular direction ?

f) How much friction would it take to stop this block from sliding?

g) What would μ need to be to just prevent sliding?

h) How hard is the plane pushing up on the box?

i) How quickly will the box accelerate down the plane?

Repeat questions (a) - (I) for a steeper plane at an 80° angle.